

CALCULATIONS OF EMISSION NEUTRONS AND FISSION FRAGMENT YIELDS FOR INTERMEDIATE ENERGY NUCLEON-INDUCED REACTIONS

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The code system MCFx developed earlier [1] on the base of extended cascade-evaporation model for description of fission cross-sections was adapted to calculations of emission neutron and fission fragment yields in reactions on heavy nuclei induced by neutrons and protons of intermediate energies.

Model of fission fragment mass distribution originated from the properties of deformation energy surface near the scission point has been evolved and incorporated into the MCFx code. Calculations for $^{209}\text{Bi}(p,x)$ and $^{238}\text{U}(p,x)$ reactions in 100-500 MeV energy region have been carried out.

Results of fission fragment calculations are in good agreement with experimental data [2] as well as mean number and spectra of prefission neutrons emitted by a number of excited nuclei at the final stage of reaction. The agreement of averaged fission fragment mass indicates that nonequilibrium stage of reaction is described in the proper way (cascade and preequilibrium reaction stages).

References

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